

CLAIMS

What we claim is:

1. A process of preparing a flax protein isolate, which comprises:
initially extracting flax oil seeds to remove mucilage therefrom,
crushing the extracted oil seeds to recover oil and leave a meal, and
processing the meal to recover a flax protein isolate therefrom.
2. The process of claim 1 wherein said initial extraction of oil seeds to remove mucilage therefrom is effected using a mildly-alkaline aqueous solution of an alkaline material.
3. The process of claim 2 wherein said mildly-alkaline solution has a pH of about 7.5 to about 9.
4. The process of claim 1 wherein said initial extraction of oil seeds to remove mucilage therefrom is effected by an aqueous solution of sodium bicarbonate at its natural pH.
5. The process of claim 2 which is effected at a temperature of about 30° to about 70°C.
6. The process of claim 3 which is effected at a temperature of about 50°C.
7. The process of claim 2 which is effected at a seed to solution ratio of about 1:1 to about 1:20.
8. The process of claim 3 which is effected at a seed to solution ratio of about 1:5 to about 1:10.
9. The process of claim 2 wherein the aqueous solution has a concentration of about 0.2 to about 0.7 M of mildly-alkaline material.
10. The process of claim 2 which is effected by stirring the oil seed in the aqueous solution for about 15 to about 60 minutes.
11. The process of claim 3 which is effected by stirring the oil seed in the aqueous solution for about 30 to about 60 minutes.
12. The process of claim 2 wherein there are multiple extractions of the oil seed until no further mucilage is extracted from the oil seeds.
13. The process of claim 2 wherein said mildly-alkaline material is sodium bicarbonate.

14. The process of claim 1 wherein said initial extraction of oil seeds to remove mucilage therefrom is effected by stirring the oil seeds for about 15 to about 60 minutes in an aqueous solution of sodium bicarbonate having a pH of about 6.0 to about 7.5 at a temperature of about 30° to about 70°C and at a seed to solution ratio of about 1:1 to about 1:20.

15. The process of claim 14 wherein said aqueous solution of sodium bicarbonate has a concentration of about 0.2 to about 0.7M, said oil seeds to solution ratio is about 1:5 to about 1:10 and the stirring is effected from about 30 to about 60 minutes, and multiple extractions of the oil seed are effected until no further mucilage is extracted from the oil seeds.

16. The process of claim 14 which is carried out using an about 0.5 M aqueous solution of sodium bicarbonate having a concentration of about 0.5 M at about 50°C and at a seed to solution ratio of about 1:10.

17. The process of claim 1 wherein said flax oil seed meal is processed to recover a flax protein isolate by a procedure including isoelectric precipitation of flax protein solution from an alkaline solution of flax protein produced by extraction of the meal with an aqueous alkaline solution.

18. The process of claim 1 wherein said flax oil seed meal is processed to recover a flax protein solution by:

solubilizing protein in said flax oil seed meal by extracting using an aqueous sodium chloride solution having an ionic strength of at least about 0.10 M at a pH of about 5 to about 7 to provide an aqueous protein solution having a concentration of about 5 to about 40 g/L,

concentrating the aqueous protein solution to a concentration of at least about 150 g/L by a selective membrane technique,

diluting the concentrated protein solution with water having a temperature of less than about 15°C to form protein micelles, and

collecting and recovering said protein micelles as a protein micellar mass of flax protein isolate.

19. The process of claim 18 wherein the protein micellar mass is dried.

20. The process of claim 18 wherein residual liquid from the recovering of the protein micellar mass is processed to recover additional quantities of flax protein isolate.
21. A flax protein isolate having a protein content of at least about 90 wt% (N x 6.25) and which comprises a 7S protein of molecular weight approximately 162,000 to 169,000 Da.
22. The flax protein of claim 21 which has a protein content of at least about 100 wt% (N x 6.25).
23. The flax protein of claim 21 which is substantially undenatured.
24. The flax protein of claim 21 comprising about 60 to about 95 wt% of the 7S protein, 0 to about 20 wt% of linin and 0 to about 20 wt% of colinin.
25. A 7S protein of flax having a molecular weight of approximately 162,000 to 169,000.